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10/533,873	05/19/2006	Roger Noel	47121-0116-00-US	7999

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EXAMINER

CHUKWURAH, NATHANIEL C

ART UNIT	PAPER NUMBER
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3721

MAIL DATE	DELIVERY MODE
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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/533,873

Applicant(s)

NOEL, ROGER

Examiner

Nathaniel C. Chukwurah

Art Unit

3721

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-8 and 14-16 is/are rejected.
- 7) ☒ Claim(s) 5 and 9-13 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/5/05; 5/19/2006</u> | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 6-8 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hartiala et al. (US 4,711,090) in view of Balazy et al. (US 2002/0179150).

With regard to claim 1, the patent to Hartiala et al. discloses a method for controlling rock drilling wherein a percussion device belonging to a rock drill machine (2) delivers impact pulses to rock through a tool and wherein the rock drill machine is simultaneously pushed against the rock by means of a feed actuator (1), the method comprising: feeding a pressure medium to the feed actuator (col. 2, line 49) along at least one feed channel as shown in Figure 4; feeding the pressure medium to the percussion device (6) along at least one percussion pressure channel (Fig. 4); determining maximum speed of the feed force considered to be a penetration rate (col. 4, lines 42-43); adjusting at least a percussion pressure on the basis of the penetration rate (col. 3, lines 4-5), conveying at least one pressure medium flow supplied to or from the feed actuator (1) through at least one restrictor (19); and the operation device of 17 of the valve 14, e.g. the surface area affecting the valve spindle and the position of the regulating device 18 of the valve, in a normal drilling situation allows the pressure in the pipe 7 to be as or only slightly lower than the pressure in the pipe 8 which considered to be adjusting the percussion pressure on the basis of the monitoring (col. 4, lines 44-49). Hartiala et al. disclose

the claimed method except for sensing the pressure of the pressure medium before the restrictor and after the restrictor in order to determine the penetration rate. Balazy et al. teach restrictor and sensors for determining the pressure of fluid flowing in a flow passage positioned both upstream and downstream of the flow restrictor such that the restrictor provide a desired pressure drop across the flow restrictor. In view of the teaching of Balazy et al., it would have been obvious to one skilled in the art at the time of the invention to modify the method of Hartiala et al. with sensing the pressure of the pressure medium before the restrictor and after the restrictor in order to provide the desired pressure drop across the flow restrictor of drilling machine.

With regard to claim 2, the modified method of Hartiala et al. further comprising as in column 4, lines 50-68 considered to be interpreting that the penetration rate has increased when, due to pressure drops, the pressure after the restrictor is decreased relative to a reference pressure before the restrictor, and decreasing the percussion pressure when the penetration rate increases.

With regard to claim 3, the modified method of Hartiala et al. further comprising as in column 3, lines 64-68 and column 4, lines 1-2 considered to be adjusting the percussion pressure in a predetermined manner with respect to the change of the penetration rate.

With regard to claim 6, the patent to Hartiala et al. discloses rock drilling arrangement comprising: a rock drill machine (2) including a percussion device (6) arranged to generate impact pulses to a tool to be connected to the rock drill machine (2); a feed beam (not shown) whereon the rock drill machine (2) has been arranged; a feed actuator (1) enabling the rock drill machine (2) to be moved in the longitudinal direction of the feed beam; a pressure medium system comprising: at least one pressure source (9); at least one pressure medium channel

(Fig. 1) leading to the percussion device (6); at least one feed channel (13) connected to the feed actuator (1); and means (14) for adjusting a percussion pressure, and wherein at least one restrictor (19) is connected to at least one feed channel (13) of the feed actuator (1).

Hartiala et al. disclose the claimed subject matter except for means for sensing the pressure active in the feed channel before the restrictor and after the restrictor.

Balazy et al. teach restrictor and sensors for determining the pressure of fluid flowing in a flow passage positioned both upstream and downstream of the flow restrictor such that the restrictor provide a desired pressure drop across the flow restrictor. In view of the teaching of Balazy et al., it would have been obvious to one skilled in the art at the time of the invention to modify the method of Hartiala et al. with sensing the pressure of the pressure medium before the restrictor and after the restrictor in order to provide the desired pressure drop across the flow restrictor of drilling machine.

With regard to claim 7, the modified rock drilling arrangement of Hartiala et al. would include a first sensing channel is connected to a section of the feed channel residing before the restrictor in the direction of flow and a second sensing channel is connected to a section after the restrictor, the first sensing channel is connected to a first pressure sensor and the second sensing channel is connected to a second pressure sensor as disclosed in Balazy et al., the arrangement further includes at least one control unit (12 Balazy et al.), pressure data obtained from the first pressure sensor and pressure data obtained from the second pressure sensor are arranged to be conveyed to the control unit, the control unit is arranged to monitor (0030 Balazy et al.) would include monitoring modified Hartiala et al.'s penetration rate on the basis of: the pressure data obtained from the pressure sensors, the control unit is provided with a control strategy for

adjusting the percussion pressure in a predetermined manner with respect to the penetration rate; and the arrangement includes at least one valve controlled by the control unit for adjusting the percussion pressure.

With regard to claim 8, the arrangement of the modified rock drilling of Hartiala et al., includes a control unit (12 Balazy et al.) which is provided with a control strategy for adjusting a feed pressure in a predetermined manner with respect to the penetration rate, and the arrangement includes at least one valve (14) capable of being controlled by the control unit for adjusting the feed pressure.

With regard to claim 14, the patent to Hartiala et al. discloses rock drilling arrangement comprising: a rock drill machine (2) including a percussion device (6) arranged to generate impact pulses to a tool to be connected to the rock drill machine (2); a feed beam (not shown) whereon the rock drill machine (2) has been arranged; a feed actuator (1) enabling the rock drill machine (2) to be moved in the longitudinal direction of the feed beam; a pressure medium system comprising: at least one pressure source (9); at least one pressure medium channel

(Fig. 1) leading to the percussion device (6); at least one feed channel (13) connected to the feed actuator (1); and means (14) for adjusting a percussion pressure; and at least one adjustment unit (Fig. 4A) for controlling the feed actuator, at least two relief valves (24 Fig. 4) arranged in series in load-sense channel as shown of the adjustment unit.

Hartiala et al. disclose the claimed subject matter except for means for sensing the pressure active in the feed channel before the restrictor and after the restrictor and a control system. Balazy et al. teach restrictor (28), sensors (14,16) and control system (12) for determining the pressure of fluid flowing in a flow passage positioned both upstream and

downstream of the flow restrictor such that the restrictor provide a desired pressure drop across the flow restrictor. In view of the teaching of Balazy et al., it would have been obvious to one skilled in the art at the time of the invention to modify the method of Hartiala et al. with sensing the pressure of the pressure medium before the restrictor and after the restrictor in order to provide the desired pressure drop across the flow restrictor of drilling machine.

With regard to claim 15, the restrictor of the modified Hartiala et al is deemed adjustable.

With regard to claim 16, the restrictor is considered to have fixed settings.

Claim Rejections - 35 USC § 103

3. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hartiala et al. (US 4,711,090) in view of Balazy et al. (US 2002/0179150) as applies to claim 1, and further in view of Rajala et al. (US 5,121,802).

With regard to claim 4, the modified method of Hartiala et al. is silent about decreasing the percussion pressure and the feed pressure in a substantially constant ratio when the penetration rate increases. Rajala et al. teach a method including decreasing the percussion pressure and the feed pressure in a substantially constant ratio when the penetration rate increases as disclosed in column 3, lines 45-49. In view of the teaching of Rajala et al. it would have been obvious to one skilled in the art at the time of the invention to provide the method of Hartiala et al. with decreasing the percussion pressure and the feed pressure in a substantially constant ratio when the penetration rate increases in order to prevent heat formation.

Allowable Subject Matter

4. Claims 5 and 9-13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The method of prior art of record fail to teach or suggest a method for measuring, delivering, determining and adjusting pressure data to the control unit.

Further, the prior art of record fail to teach or suggest the monitoring valve comprising: a body, an elongated slide having a first end and a second end, at least one force element that is arranged to act on the first end of the slide and at least one controllable channel that is arranged to open and close by, the slide has at least one collar, a sleeve having outer rim and the inner rim a first chamber and a second chamber on opposite sides of the sleeve, at least a first pressure at least a second pressure channel.

Conclusion

5. Refer to attachment for notice of references cited and recommended for consideration based on their disclosure of limitations of the claimed invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathaniel C. Chukwurah whose telephone number is (571) 272-4457. The examiner can normally be reached on M-F 6:00AM-2:30PM.

6. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rinaldi Rada can be reached on (571) 272-4467. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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7. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NC

January 19, 2008.

A handwritten signature in black ink, appearing to read 'Rinaldi I. Rada', with a large, stylized loop at the end.

Rinaldi I. Rada
Supervisory Patent Examiner
Group 3700